

## METHOD AND APPARATUS FOR ALTERNATE DISPLAY INFORMATION

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### RELATED APPLICATIONS

This application claims priority to commonly-owned, co-pending U.S. Provisional Patent Application Serial No. 60/451,531, filed March 3, 2003, entitled “METHOD AND APPARATUS FOR ALTERNATE DISPLAY INFORMATION,” the entire content of which is incorporated herein by reference for all purposes.

### FIELD OF THE INVENTION

The present invention relates to gaming and gaming devices. More 15 specifically, the present invention relates to displaying information related to the use of gaming devices.

### BACKGROUND OF THE INVENTION

Gaming devices (*e.g.*, reeled slot machines, video poker machines, *etc.*) 20 generate more than \$15 billion per year in revenue for casinos in the United States alone. This revenue accounts for more than half of the total gaming revenue for a typical United States casino. The situation is similar in other countries and regions in which gaming devices are popular, such as Europe and Australia. Accordingly, casino operators are interested in providing the most popular games to increase the 25 enjoyment of playing in order to maintain or increase levels of revenue.

Gaming devices with multiple paylines have become more popular in recent years. Most commonly implemented in five reel slot machines, multiple paylines allow players to place multiple bets on multiple paylines having multiple 30 chances to win on each play of the game. This type of game has become popular at least in part due to the fact that there is a greater likelihood of one of the many paylines winning than games that are played with only a single payline. While playing multiple paylines may require placing a bet for each payline and a winning

outcome on one of the paylines may not be greater than the amount wagered to play multiple paylines, the thrill of winning is experienced more often leading to a more popular game.

While games with multiple paylines are popular, they also can be confusing as they may have non-traditional (e.g., non-horizontal, non-linear, and/or diagonal) paylines. A common payline on a five-reel slot machine is a V shaped payline or an inverted-V payline. FIG. 1 illustrates an example of a five-reel slot machine 100 with nine different paylines 102. Considering the popularity of gaming among the older population, the complexity of such games and paylines may be a deterrent to playing. In order to combat this complexity, some machines may highlight winning paylines on the primary display by, for example, lighting up the winning payline, but this may be inadequate. In addition the games and machines are limited to the types of paylines and pay tables that can be easily explained and interpreted on the primary display screen of the gaming machine. A wide variety of changes and variations could be applied to games if there was some way that the players of the game could better understand the game outcomes. For example, more complicated pay tables could be implemented if there was some indication that players would be able to understand the payouts.

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#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an illustration of a prior art five reel slot machine with multiple paylines.

FIG. 2 is an illustration of an example gaming device according to some embodiments of the present invention.

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FIG. 3 is a block diagram illustrating an example gaming device according to some embodiments of the present invention.

FIG. 4 is a block diagram illustrating an example gaming device according to some other embodiments of the present invention.

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FIG. 5 is a table illustrating an example data structure of a pay table database for use in some embodiments of the present invention.

FIGs. 6A through 6C are illustrations of primary and alternate gaming device displays during a spin at three different points in time according to some embodiments of the present invention.

5 FIG. 7 is an illustration of a primary and alternate gaming device display according to other embodiments of the present invention.

FIG. 8 is an illustration of a slot machine according to some embodiments of the present invention.

### **DETAILED DESCRIPTION OF EMBODIMENTS OF THE INVENTION**

10 The present invention overcomes the above and other drawbacks of the prior art by providing an alternate display in conjunction with the gaming devices' primary display. The alternate display may provide information such as game outcomes reformatted or otherwise modified for improved clarity. The invention is especially useful with gaming machines for which the game outcome is complex, 15 e.g., machines that utilize multiple paylines and/or complex pay tables.

20 The present invention helps to clarify the game outcomes of more complicated gaming machines. By simplifying information provided to players, the present invention allows complex gaming devices to be more accessible and thus, more popular with a broader range of players. In addition, the present invention expands the possibility of acceptance and popularity of games that have more complicated game outcomes than existing gaming devices. Thus, the present invention may be used to expand the variety of games and outcomes available to the player.

25 With these and other advantages and features of the invention that will become hereinafter apparent, the nature of the invention may be more clearly understood by reference to the following detailed description of the invention, the appended claims and the several drawings included herein.

30 In the following description, reference is made to the accompanying drawings that form a part hereof, and in which is shown, by way of illustration, specific embodiments in which the invention may be practiced. These embodiments are described in sufficient detail to enable those skilled in the art to practice the invention, and it is to be understood that other embodiments may be

utilized and that structural, logical, software, hardware, and electrical changes may be made without departing from the scope of the present invention. The following description is, therefore, not to be taken in a limited sense, and the scope of the present invention is defined by the appended claims.

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#### A. TERMS

Throughout the description that follows and unless otherwise specified, the following terms may include and/or encompass the example meanings provided in this section. These terms and illustrative example meanings are provided to clarify 10 the language selected to describe embodiments of the invention both in the specification and in the appended claims.

The term “reel position” may refer to a location on a slot machine reel wherein a symbol is indicated. Note that only a portion of all the reel positions are typically visible on a traditional slot machine. Some conventional slot machines, 15 for example, have twenty-two reel positions per reel with only three reel positions per reel visible at any given time. In such a twenty-two position reel, the symbol on each reel position is static and does not change from one handle pull to the next. In the present disclosure, the visible reel positions of a given reel with only three visible reel positions may be referred to as the top, middle, and bottom positions. 20 Note that in video slot machines, a “virtual” reel may have any number of symbols, reel positions, and/or any number of visible reel positions.

The term “symbol” may refer to an image or other marking that appears on a reel in a given reel position. Typically each reel position includes at least one symbol. Traditional symbols include “BAR,” “CHERRY,” “LEMON,” “7,” and 25 “ORANGE,” but any distinct image may be used such as a player’s image, a game character, or a Monopoly® game piece.

The term “payline” may refer to a set or concatenation of reel positions that together define the location of at least one complete outcome upon a spin resolution of a slot machine. Typically, a payline identifies one reel position per 30 reel and together, the identified reel positions are connected together by lines drawn between each of the identified reel positions. Note that conventional paylines were straight, horizontal lines and in a slot machine with three visible reel

positions per reel, there were typically only one, two, or three horizontal paylines available upon which to place a wager. Slot machines with more complex paylines were later introduced. Among others, these more complex paylines included diagonal lines, V-shaped paylines, and inverted V-shaped paylines. Note that in 5 such slot machines, each visible reel position may be part of more than one payline. Also note that in video slot machines, paylines may include more than one reel position per reel since the symbols displayed on a virtual reel may be dynamically changed with each handle pull or even with each simulated revolution of the virtual reel. Thus, it is possible to have a vertical payline in a video slot 10 machine. Note that the present invention also contemplates paylines that are not lines at all and include reel positions that are not adjacent to each other. Thus, the term payline as used herein may refer to a discontinuous collection of reel 15 positions. Note further that when a payline shares at least one reel position with another payline, the two paylines are said to overlap or have one or more reel positions in common. When two paylines intersect in any manner, they are said to cross. Thus, the term "cross" refers to paylines that have one or more reel 20 positions in common and to paylines that merely intersect without overlapping at all. For example, referring to the slot machine depicted in FIG. 1, the paylines labeled 4 and 7 cross without sharing any reel positions and the paylines labeled 1 and 4 cross because they share the top visible reel position on the first reel and the 25 top visible reel position on the fifth reel.

The term "basic game" may refer to play resulting from the spinning of standard physical or graphical slot reels, the dealing of physical or electronic cards, or other game outcomes. The outcome of a basic game might be CHERRY- 25 CHERRY-BAR, 4 hits on a 7-spot keno ticket, or the hand Ks (king of spades), Qd (queen of diamonds), 4h (four of hearts), 2s (two of spades), 6s (six of spades) in video poker.

The term "bonus game" may refer to a secondary game separate from and/or related to the basic game in which the player typically does not have to 30 wager any additional coins and has the possibility of winning a relatively large number of coins.

The terms “controller” and “computer” shall be synonymous and may refer to an electronic device (*e.g.*, a personal computer) that communicates with one or more gaming devices. In a manner well known in the art, a controller may function as a computer server and may control the actions of gaming devices. A 5 controller may also contain databases to record statistics such as coin-in, coin-out, jackpot information, theoretical wins, *etc.*

The term “game” may refer to a gambling event with a beginning and end that may encompass a number of spins, handle pulls, or span of time. The end of the game may be determined voluntarily (in which the player elects to stop play) or 10 involuntarily (in which the gaming device terminates play).

The term “game character” may refer to a character, which may be a cartoon and/or digitally generated, which is involved in the game playing experience. The character may entertain the player, explain payouts, try to steal 15 objects from the player, try to defend objects held by the player, and the like. The character could be a life-like animation of a television character, or even just the audio associated with a well-known character.

The terms “gaming device” and “gaming machine” shall be synonymous and may refer to any electrical, mechanical, or electro-mechanical device that, in a manner well known in the art, accepts wagers, steps through a process to determine 20 an outcome, and pays winnings based on the outcome. The outcome may be randomly generated, as with a slot machine; may be generated through a combination of randomness and player skill, as with video poker; or may be generated entirely through player skill. Gaming devices may include slot machines (both video and mechanical reels), video poker machines, video 25 blackjack machines, video roulette machines, video keno machines, video bingo machines, pachinko machines, video lottery terminals, handheld gaming devices, and the like.

The terms “handle pull” and “spin” shall be synonymous and may refer to a single play at a gaming device whether or not a handle is involved in the play and 30 whether or not a handle is even included in the gaming device. The meaning is intended to be flexible in that a single handle pull might constitute a single complete game, or a single wager. For example, a handle pull might represent a

single spin of the reels or a series of spins which culminate in a final aggregate outcome. In a video poker embodiment, handle pulls may result in a first and second hands, both in the same game.

The term “outcome” may refer to a result of gaming event or portion  
5 thereof, such as CHERRY-CHERRY-CHERRY-CHERRY-CHERRY in a multiple  
payline slot machine game, a push in blackjack, a flush in video poker, the  
completion of a puzzle, the attainment of a goal, *etc.* Different types of gaming  
devices may have widely varying types of outcomes. Several are described in  
detail herein and still others will be apparent to those of skill in the art based on the  
10 present disclosure.

The term “payout” may refer to a prize, reward, winnings, or bonus  
associated with a certain outcome.

The term “peripheral device” and “player device” shall be synonymous and  
may refer to a device that may operatively connect to a gaming device that is  
15 configured to assist in the operation of game-related functions. In some  
embodiments peripheral devices may be located near players at a table game or  
carried by players playing a gaming device. In some embodiments, a player device  
may provide the player with an alternate display.

The term “player tracking card” may refer to a casino issued plastic or  
20 paper card (resembling a frequent shopper card) given to players as a way of  
identifying the player at a slot machine or table game. As is well known in the art,  
such cards typically have encoded thereon (in machine-readable and/or human  
readable form) a player identifier (*e.g.*, a six digit number) which uniquely  
identifies the player (*e.g.*, because the number is associated with a record in a  
25 database that includes corresponding player information). At a slot machine, the  
player inserts the card into a reader device and the player identifier is read from the  
card, most often magnetically. From the player identifier which the reader device  
reads, the corresponding player information may in turn be read from the database,  
typically via a network connection between the reader device and a device hosting  
30 the database.

The term “prepaid session” may refer to a quantity of time or handle pulls  
that are paid for in advance. Once a session is prepaid, the player does not need to

supply any additional funds until the session has been completed. A prepaid session may allow the player to complete many games during the session.

The terms “primary game screen,” “primary display” and “main display” shall be synonymous and may refer to a screen used to display game information such as a video representation of one or more spinning reels. Note that a main display on a mechanical reel slot machine may comprise a physical window that allows a player to see the mechanical reels or portions thereof (*i.e.* visible reel positions). Thus, in some embodiments, a display may not include a screen or other electronic display.

10 The term “secondary game screen” may refer to a screen used to display secondary game information such as the animation and graphics associated with a bonus round. A secondary game screen may be distinct from an alternate display.

15 The term “alternate display” may refer to a display other than the main display and/or a secondary game screen, wherein the information on the main display is presented to the player in a simplified, reformatted, and/or other form. An alternate display may include additional information such as a representation of which outcomes of which paylines paid out and/or upon which paylines the player placed a wager. Note that an alternate display may be presented to a player using the same physical device as the primary display or the secondary game screen. In 20 other words, an alternate display may be in the form of, for example, a graphical user interface (GUI) window on the main display. Additionally, an alternate display may include a printout on a paper substrate, such as a cashless gaming ticket/receipt, or a display on the screen of a PDA.

25 **B. SYSTEM**

Turning to FIG. 2, a gaming device 200 includes a processor (not shown) (including a mechanism to generate outcomes) and a primary display 202 to show those outcomes, as well as a mechanism for receiving and dispensing currency. In accordance with one or more embodiments, a gaming device 200 also includes an 30 alternate display 204 which may also be controlled by the processor. As with the main display 202, the alternate display 204 may be one of a variety of types of displays including cathode-ray tube, LCD, plasma display, *etc.* In normal

operation a game is started (*e.g.*, by depositing a token and pressing a button), a game outcome is generated, displayed on the primary display 202 (*e.g.*, the reels stop in a certain position), and then if the game outcome is a winning outcome, a payout is dispensed.

5        The present invention presents the game outcome information (which may be in addition to the display of the outcome on the primary display 202) on an alternate display 204 (which may be larger, smaller or the same size as the primary display) with information displayed as to be clearer and easier to understand than the game outcome information displayed on the primary display.

10       Without the alternate display 204, the paylines and the pay tables may cause confusion and could be made easier to read and understand. Confusion may occur due to the different paylines which may be non-linear (*e.g.*, V-shaped) and may overlap, cross, and/or share reel positions. Pay tables may have payouts that depend upon the orientation or order of certain symbols (*e.g.*, the first three 15 symbols, not just any three symbols in a row, have to be cherries to win). The primary displays 202 may be designed to be attractive and flashy, but may not be designed for clarity. The alternate display 204 may be able to correct some of these issues and provide a less complicated view of the game outcome.

20       Some complications that may be present in the information presented on the primary display 202 include distortion (some symbols could be larger than others), angle (symbols on a slot machine reel may be curved and also not perpendicular to the player and may be susceptible to glare), colors that are difficult to differentiate (especially for various types of color blindness).

25       The game outcome information displayed on the alternate display 204 may be received from the processor and may be displayed in a variety of different fashions. The changes may include variations in color (*e.g.*, easier to read colors), contrast, brightness, size (*e.g.*, magnified), shape (*e.g.*, modified fruit symbols, letters or numbers), grouping (*e.g.*, representations of winning paylines may be displayed together, paylines upon which the player actually wagered may be 30 grouped), order (*e.g.*, left to right in alphabetical or probability order), arrangement (*e.g.*, in a horizontal line rather than along a non-linear payline), and/or orientation (*e.g.* in a vertical list or a compact rectangle). The alternate display 204 may

highlight particular symbols or rows in a variety of methods (e.g., making them blink, highlighting them with color, surrounding the symbols with color, only displaying winning outcomes) and the game outcome may be revealed at different speeds or times than the game (e.g., display may be updated in real time as each reel stops spinning, outcome may be displayed all at once when the last reel stops spinning, etc.).

The present invention may include an alternate display controller which receives the game outcome from the processor and then determines the appropriate alternate manner in which to display the outcome, possibly based on player 10 specified preferences. An alternate display controller may include a player device. As will be discussed below with reference to FIG. 4, an advantage of the present invention is that the alternate display may not only be included as a part of new gaming machine construction, but may also be retrofitted to existing games. By combining the alternate display with a processor, a gaming device (or game) 15 without an alternate display may have an alternate display added if the alternate display controller can gain access to the outcomes from the original gaming device (or game). Such access may be gained via a communications port or other network interface within the original gaming device, or via data entry by a dealer at a table game.

20 The present invention can be configured to work in a network environment including a computer (e.g., a slot server of a casino) that is in communication, via a communications network, with one or more gaming devices 200 (e.g., slot machines, video poker machines). The computer may communicate with the gaming devices 200 directly or indirectly, via a wired or wireless medium such as 25 the Internet, LAN, WAN or Ethernet, Token Ring, or via any appropriate communications means or combination of communications means. Each of the gaming devices 200 may comprise computers, such as those based on the Intel® Pentium® processor, that are adapted to communicate with the computer. Any number and type of devices may be in communication with the computer.

30 Communication between the devices 200 and the computer, and among the devices 200, may be direct or indirect, such as over the Internet through a Web site maintained by computer on a remote server or over an on-line data network

including commercial on-line service providers, bulletin board systems and the like. In yet other embodiments, the devices 200 may communicate with one another and/or the computer over RF, cable TV, satellite links and the like.

Some, but not all, possible communication networks that may comprise the 5 network or be otherwise part of the system include: a local area network (LAN), a wide area network (WAN), the Internet, a telephone line, a cable line, a radio channel, an optical communications line, and a satellite communications link.

Possible communications protocols that may be part of the system include: 10 Ethernet (or IEEE 802.3), SAP, ATP, Bluetooth™, and TCP/IP. Communication may be encrypted to ensure privacy and prevent fraud in any of a variety of ways well known in the art.

Those skilled in the art will understand that devices in communication with each other need not be continually transmitting to each other. On the contrary, such devices need only transmit to each other as necessary, and may actually 15 refrain from exchanging data most of the time. For example, a device in communication with another device via the Internet may not transmit data to the other device for weeks at a time.

In some embodiments, a server computer may not be necessary and/or preferred. For example, the present invention may, in one or more embodiments, 20 be practiced on a stand-alone gaming device 200 and/or a gaming device 200 in communication only with one or more other gaming devices 200 (*i.e.* with a computer server). In such embodiments, any functions described as performed by the computer or data described herein as being stored on the computer may instead be performed by or stored on one or more gaming devices 200.

25 An alternative system according to some embodiments of the present invention includes a computer (*e.g.*, a slot server of a casino) that is in communication, via a communications network, with one or more gaming devices 200 (*e.g.*, slot machines, video poker machines) and one or more peripheral devices. A peripheral device may, in turn, be in communication with a peripheral 30 device server and, in some embodiments, with the computer. In some embodiments the peripheral device server may be in communication with one or more gaming devices 200 and/or the computer.

Each of the devices of the system may comprise computers, such as those based on the Intel® Pentium® processor, that are adapted to communicate with the computer. Further, each of the devices may comprise a gaming device 200 such as a mechanical or electronic slot machine, a video poker machine, a video blackjack machine, a video keno machine, a pachinko machine, a video roulette machine, and/or a lottery terminal. Further yet, each of the devices may comprise an external or internal module associated with one or more of the gaming devices 200 that is capable of communicating with one or more of the gaming devices 200 and of directing the one or more gaming devices 200 to perform one or more functions.

5 Any number of devices may be in communication with the computer. Any number and type of peripheral devices may be in communication with a gaming device 200, peripheral device server and the computer.

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Communication between the devices may be direct or indirect, such as over the Internet through a Web site maintained by the computer on a remote server or 15 over an on-line data network including commercial on-line service providers, bulletin board systems and the like. In yet other embodiments, any and all of the devices of the system (*i.e.*, the gaming devices 200, the server computer, peripheral devices, and the peripheral device server) may communicate with one another over RF, cable TV, satellite links and the like.

20 Some, but not all, possible communication networks that may comprise the network or otherwise be part of the system include: a local area network (LAN), a wide area network (WAN), the Internet, a telephone line, a cable line, a radio channel, an optical communications line, a satellite communications link. Possible communications protocols that may be part of the system include: Ethernet (or 25 IEEE 802.3), SAP, ATP, Bluetooth™, and TCP/IP. Communication may be encrypted to ensure privacy and prevent fraud in any of a variety of ways well known in the art.

In some embodiments, the computer may not be necessary and/or preferred. For example, the present invention may, in one or more embodiments, be practiced 30 on a stand-alone gaming device 200, one or more gaming devices 200 in communication with one or more peripheral devices, one or more gaming devices 200 in communication with a peripheral device server, one or more peripheral

devices in communication with a peripheral device server, and/or a gaming device 200 in communication only with one or more other gaming devices 200. In such embodiments, any functions described as performed by the computer or data described as being stored in a memory of the computer may instead be performed 5 by or stored on one or more gaming devices 200 one or more peripheral devices, and/or peripheral device server.

Similarly, a peripheral device server may not be desired and/or needed in some embodiments of the present invention. In embodiments that do not involve a peripheral device server, any or all of the functions described herein as being 10 performed by a peripheral device server may instead be performed by another server computer, the computer, one or more gaming devices 200, one or more peripheral devices, or a combination thereof. Similarly, in embodiments that do not involve a peripheral device server any data described herein as being stored in a memory of a peripheral device server may instead be stored in a memory of 15 another server computer, the computer, one or more gaming devices 200, one or more peripheral devices, or a combination thereof.

Any or all of the gaming devices 200 may, respectively, include or be in communication with a peripheral device. A peripheral device may be a device that receives information from (and/or transmits information to) one or more gaming 20 devices. For example, a peripheral device may be operable to receive information about outcomes generated by a gaming device 200.

In one or more embodiments, one or more such peripheral devices may be in communication with a peripheral device server. This allows the peripheral device server to receive information regarding a plurality of games being played on 25 a plurality of gaming devices 200. The peripheral device server, in turn, may be in communication with the computer. It should be understood that any functions described herein as performed by a peripheral device may also or instead be performed by the peripheral device server. Similarly, any data described herein as being stored on or accessed by a peripheral device may also or instead be stored on 30 or accessed by the peripheral device server.

A peripheral device may be operable to access a database (*e.g.*, of a peripheral device server) to provide benefits (*e.g.*, cashless gaming receipts) based on, for example, an actual outcome of a game.

The peripheral device server may also monitor player gambling history 5 over time by associating gambling behavior with player identifiers, such as player tracking card numbers. For example, information about the player obtained or accessed by a peripheral device server may be analyzed, *e.g.*, to identify those players that a particular gaming machine owner, operator, or manufacturer finds most desirable. Based upon desired objectives, the peripheral device server may 10 direct the appropriate peripheral device to present outcome information in a customized format to specific players. For example, a particular player may desire that all outcomes are presented in an order from a highest to lowest payout amount.

Information received by a peripheral device from a gaming device 200 may 15 include gambling data such as, for example, a number of paylines activated (or bet upon) on, a number of winning paylines, player display color preferences, language preferences, number of games initiated per unit of time, outcomes displayed for games initiated, payouts corresponding to outcomes displayed, a credit meter balance of the gaming device 200, and/or other preference data 20 associated with the player currently playing the gaming device 200.

The functions described herein as being performed by a peripheral device server and/or a peripheral device may, in one or more embodiments, be performed by the computer (in lieu of or in conjunction with being performed by a peripheral device server and/or a peripheral device).

In some embodiments, a peripheral device may be useful for implementing 25 the embodiments of the present invention into the operation of a conventional gaming device. For example, in order to avoid or minimize the necessity of modifying or replacing a program already stored in a memory of a conventional gaming device, an external or internal module that comprises a peripheral device may be inserted in or associated with a conventional gaming device to transform it 30 into a gaming device 200 of the present invention.

Thus, for example, a peripheral device may be utilized to monitor play of the gaming device 200 and output messages and an outcome of a game. In such

embodiments the gaming device 200 with which the peripheral device is in communication may continue to operate conventionally. In such embodiments the gaming device 200 may continue to output an outcome for each game played. The peripheral device, however, may output outcome information in different formats 5 when appropriate. The peripheral device may also output messages to the player. The peripheral device may also provide benefits to a player (*e.g.*, coins, tokens, electronic credits, paper receipts exchangeable for cash, services, and/or merchandise).

Accordingly, a peripheral device may include (i) a communications port 10 (*e.g.*, for communicating with one or more gaming devices, peripheral device server, another peripheral device, and/or computer); (ii) a display (*e.g.*, for displaying outcomes in an altered format and other information such as payouts), (iii) another output means (*e.g.*, a speaker, light, or motion device to communicate with a player), and/or (iv) a benefit providing means (*e.g.*, a printer and paper 15 dispensing means, a credit meter, and/or a hopper and hopper controller).

In some embodiments, a peripheral device may not output reformatted outcomes and/or messages to a player but may instead direct the processor of a gaming device 200 to perform such functions. For example, a program stored in a memory of a peripheral device may cause a processor of a gaming device 200 to 20 perform certain functions. For example, a program stored in a memory of a peripheral device may cause a processor of a gaming device 200 to output an outcome on a display in a player specified format, or in some other simplified format and/or communicate with another device. Examples of peripheral devices include (1) electronic apparatuses “retrofitted” to conventional gaming devices so 25 that inventive processes disclosed herein may be realized through game play at the gaming device 200, (2) Personal Digital Assistants (PDAs) such as those manufactured by Palm, Inc., (3) laptop computers, (4) cellular telephones, (5) pagers, or (6) any combination thereof.

30 C. DEVICES

Turning to FIG. 3, a gaming device 300 may be implemented as a system controller, a dedicated hardware circuit, an appropriately programmed general-

purpose computer, or any other equivalent electronic, mechanical or electro-mechanical device. As indicated above, the gaming device 300/200 may comprise, for example, a slot machine, a video poker machine, a video blackjack machine, a video keno machine, a video lottery machine, a pachinko machine or a table-top game.

5 In various embodiments, a gaming device 300/200 may comprise, for example, a personal computer (*e.g.*, which communicates with an online casino Web site), a telephone (*e.g.*, to communicate with an automated bingo computer server that provides gaming services), or a portable handheld gaming device (*e.g.*, 10 a personal digital assistant or Nintendo GameBoy®). The gaming device 300/200 may comprise any or all of the gaming devices of the aforementioned systems. In some embodiments, a user device such as a PDA or cell phone may be used in place of, or in addition to, some or all of the gaming device components. Further, 15 a gaming device 300/200 may comprise a personal computer or other device operable to communicate with an online casino and facilitate game play at the online casino. In one or more embodiments, the gaming device 300/200 may comprise a computing device operable to execute software that simulates play of a reeled slot machine game, video poker game, video blackjack game, video keno game, video roulette game, or lottery game.

20 In some embodiments, a gaming device 300/200 may comprise a processor (CPU) 302, such as one or more Intel® Pentium® processors. The processor 302 is operable to communicate with a random number generator 308, which may be a component of the gaming device 300.

25 The random number generator 308, in accordance with some embodiments of the present invention, may generate data representing random or pseudo-random values (referred to as “random numbers” herein). The random number generator 308 may generate a random number every predetermined unit of time (*e.g.*, every thousandth of a second) or in response to an initiation of a game on the gaming device 300. In some embodiments, the generated random numbers may be used as 30 they are generated (*e.g.*, the random number generated at substantially the time of game initiation is used for that game) and/or stored for future use. A random number generated by the random number generator 308 may be used by the

processor 302 to determine, for example, at least one of an outcome and payout. A random number generator 308, as used herein, may be embodied as a processor separate from but working in cooperation with the processor 302. Alternatively, the random number generator 308 may be embodied as an algorithm, program 5 component, or software stored in the memory of the gaming device 300 and used to generate a random number.

Note that, although the generation or obtainment of a random number is described herein as involving a random number generator 308 of a gaming device 300, other methods of determining a random number may be employed. For 10 example, a gaming device owner or operator may obtain sets of random numbers that have been generated by another entity. HotBits™, for example, is a service that provides random numbers that have been generated by timing successive pairs of radioactive decays detected by a Geiger-Muller tube interfaced to a computer. A blower mechanism that uses physical balls with numbers thereon may be used to 15 determine a random number by randomly selecting one of the balls and determining the number thereof.

The processor 302 may also be operable to communicate with a benefit output device, which may be a component of gaming device 300. The benefit output device may comprise one or more devices for outputting a benefit to a 20 player of the gaming device. For example, in some embodiments the gaming device 300 may provide coins and/or tokens as a benefit. In such embodiments, the benefit output device may comprise a hopper 352 and hopper controller 350, for dispensing coins and/or tokens into a coin tray of the gaming device. In another example, the gaming device 300 may provide a receipt or other document 25 on which there is printed an indication of a benefit (*e.g.*, a cashless gaming receipt that has printed thereon a monetary value, which is redeemable for cash in the amount of the monetary value). In such embodiments, the benefit output device may comprise a printing and document dispensing mechanism. In yet another example, the gaming device 300 may provide electronic credits as a benefit 30 (which, *e.g.*, may be subsequently converted to coins and/or tokens and dispensed from a hopper into a coin tray). In such embodiments, the benefit output device may comprise a credit meter balance and/or a processor that manages the number

of electronic credits that is indicated on a display of a credit meter balance. In yet another example, the gaming device 300 may credit a monetary amount to a financial account associated with a player as a benefit provided to a player. The financial account may be, for example, a credit card account, a debit account, a 5 charge account, a checking account, or a casino account. In such embodiments, the benefit output device may comprise a device 342 for communicating with a server on which the financial account is maintained.

10 Note that, in one or more embodiments, the gaming device 300 may include more than one benefit output device. For example, the gaming device 300 may include both a hopper 352 and hopper controller 350 combination and a credit meter balance. Such a gaming device 300 may be operable to provide more than one type of benefit to a player of the gaming device 300. A single benefit output device may be operable to output more than one type of benefit. For example, a 15 benefit output device may be operable to increase the balance of credits in a credit meter and communicate with a remote device in order to increase the balance of a financial account associated with a player.

20 The processor 302 is also operable to communicate with a main display device 310, which may be a component of gaming device 300. The display device 310 may comprise, for example, one or more display screens or areas for outputting information related to game play on the gaming device 300, such as a cathode ray tube (CRT) monitor, liquid crystal display (LCD) screen, or light emitting diode (LED) screen. In one or more embodiments, a gaming device 300 25 may comprise more than one main display device 310. For example, a gaming device may comprise an LCD display for displaying electronic reels and a display area that displays rotating mechanical reels.

30 The processor 302 may also be in communication with one or more alternate display devices 312 besides the main display device 310, for outputting information (e.g., to a player or another device). Such other one or more alternate display devices 312 may also be components of a gaming device 300. Such other one or more alternate display devices 312 may include, for example, an audio speaker 346 (e.g., for outputting an outcome or information related thereto, in addition to or in lieu of such information being output via the main display device

310), an infra-red transmitter, a radio transmitter, an electric motor, a printer (e.g., such as for printing cashless gaming vouchers), a coupon or product dispenser, an infra-red port (e.g., for communicating with a second gaming device or a portable device of a player), a Braille computer monitor, and a coin or bill dispenser. For 5 gaming devices 300, common display devices include a cathode ray tube (CRT) monitor on a video poker machine, a bell on a gaming device (e.g., rings for each payline a player wins on), an LED display of a player's credit balance on a gaming device, an LCD display of a personal digital assistant (PDA) for displaying keno numbers.

10 As indicated above, the main display device 310 may comprise, for example, one or more display areas. For example, one of the display areas may display outcomes of games played on the gaming device 300 (e.g., electronic reels of a gaming device). Another of the display areas may display rules for playing a game of the gaming device 300. Yet another of the display areas may display the 15 benefits obtainable by playing a game of the gaming device 300 (e.g., in the form of a payout table). In one or more embodiments, the gaming device 300 may include more than one main display device 310, one or more other output devices, or a combination thereof (e.g., two display devices 310 and two audio speakers).

The processor 302 may also be in communication with an input device 338, 20 340, 342, which is a device that is capable of receiving an input (e.g., from a player or another device) and which may be a component of gaming device 300. An input device 336, 338, 340, 342 may communicate with or be part of another device (e.g. a server, another gaming device 300, etc.). Some examples of input devices 336, 338, 340, 342 include: a bar-code scanner, a magnetic stripe card 25 reader 334, a computer keyboard or keypad, a button, a handle, a keypad, a touch-screen, a microphone, an infrared sensor, a voice recognition module, a coin or bill acceptor 348, a sonic ranger, a computer port, a video camera, a motion detector, a digital camera, a network card 342, a universal serial bus (USB) port, a GPS receiver, a radio frequency identification (RFID) receiver, an RF receiver, a 30 thermometer, a pressure sensor, an infrared port (e.g., for receiving communications from a second gaming device or from a another device such as a smart card or PDA of a player), and a weight scale. For gaming devices 300,

common input devices may include a button or touch screen on a video poker machine, a lever or handle connected to the gaming device, a magnetic stripe reader to read a player tracking card inserted into a gaming device, a touch screen for input of player selections during game play, and a coin and bill acceptor 348.

5        The processor 302 may also be in communication with a payment system, which may be a component of the gaming device 300. The payment system is a device capable of accepting payment from a player (e.g., a bet or initiation of a balance) and/or providing payment to a player (e.g., a payout). Payment is not limited to money, but may also include other types of consideration, including  
10      products, services, and alternate currencies. Exemplary methods of accepting payment by the payment system include (i) receiving hard currency (*i.e.*, coins or bills), and accordingly the payment system may comprise a coin or bill acceptor 348; (ii) receiving an alternate currency (e.g., a paper cashless gaming voucher, a coupon, a non-negotiable token), and accordingly the payment system may  
15      comprise a bar code reader, card reader 334, and/or other sensing means; (iii) receiving a payment identifier (e.g., a credit card number, a debit card number, a player tracking card number) and debiting the account identified by the payment identifier; and (iv) determining that a player has performed a value-added activity (e.g., participating in surveys, monitoring remote images for security purposes,  
20      referring friends to the casino).

      The processor 302 is in communication with a memory 304, 328, 330 and a communications port such as a network server interface 342 (*e.g.*, for communicating with one or more other devices). The memory 304, 328, 330 may comprise an appropriate combination of magnetic, optical and/or semiconductor  
25      memory, and may include, for example, Random Access Memory (RAM) 328, Read-Only Memory (ROM) 330, a compact disc and/or a hard disk 304. The memory may comprise or include any type of computer-readable medium. The processor 302 and the memory may each be, for example: (i) located entirely within a single computer or other device; or (ii) connected to each other by a  
30      remote communication medium, such as a serial port cable, telephone line or radio frequency transceiver. In some embodiments, the gaming device 300 may

comprise one or more devices that are connected to a remote server computer for maintaining databases.

The memory, for example a hard disk 304, stores a program 354 for controlling the processor 302. The processor 302 performs instructions of the 5 program 354, and thereby operates in accordance with the present invention, and particularly in accordance with the methods described in detail herein. The program 354 may be stored in a compressed, uncompiled and/or encrypted format. The program 354 furthermore includes program elements that may be necessary, such as an operating system 344, a database management system and "device 10 drivers" for allowing the processor 302 to interface with computer peripheral devices. Appropriate program elements are known to those skilled in the art, and need not be described in detail herein.

The terms "computer-readable medium" or "computer readable media" as used herein may refer to any media or medium that may participate in providing 15 instructions to the processor 302 of the gaming device 300 (or any other processor of a device described herein) for execution. Such a medium may take many forms, including but not limited to, non-volatile media, volatile media, and transmission media. Non-volatile media include, for example, optical or magnetic disks, such as memory. Volatile media include dynamic random access memory (DRAM), 20 which typically constitutes the main memory. Transmission media include coaxial cables, copper wire and fiber optics, including the wires that comprise a system bus coupled to the processor 302. Transmission media may carry acoustic or light waves, such as those generated during radio frequency (RF) and infrared (IR) data communications. Common forms of computer-readable media include, for 25 example, a floppy disk, a flexible disk, hard disk, magnetic tape, any other magnetic medium, a CD-ROM, DVD, any other optical medium, punch cards, paper tape, any other physical medium with patterns of holes, a RAM, a PROM, an EPROM, a FLASH-EEPROM, any other memory chip or cartridge, a carrier wave as described hereinafter, or any other medium from which a computer can read.

30 Various forms of computer readable media may be involved in carrying one or more sequences of one or more instructions to processor 302 (or any other processor of a device described herein) for execution. For example, the

instructions may initially be borne on a magnetic disk of a remote computer. The remote computer can load the instructions into its dynamic memory and send the instructions over a telephone line using a modem. A modem local to a gaming device 300 (or, *e.g.*, a server) can receive the data on the telephone line and use an infrared transmitter to convert the data to an infrared signal. An infrared detector can receive the data carried in the infrared signal and place the data on a system bus for the processor 302. The system bus carries the data to main memory, from which the processor 302 retrieves and executes the instructions. The instructions received by main memory may optionally be stored in memory either before or 5 after execution by the processor 302. In addition, instructions may be received via a communication port as electrical, electromagnetic or optical signals, which are exemplary forms of carrier waves that carry data streams representing various 10 types of information. Thus, the gaming device 300 may obtain instructions in the form of a carrier wave.

15 According to some embodiments of the present invention, the instructions of the program 354 may be read into a main memory from another computer-readable medium, such from a ROM. Execution of sequences of the instructions in the program 354 causes the processor 302 to perform the process steps described herein. In alternate embodiments, hard-wired circuitry may be used in place of, or 20 in combination with, software instructions for implementation of the processes of the present invention. Thus, embodiments of the present invention are not limited to any specific combination of hardware and software. As discussed with respect to aforementioned systems, execution of sequences of the instructions in a program 354 of a peripheral device in communication with the gaming device 300 may also 25 cause the processor 302 to perform some of the process steps described herein.

The memory may also store one or more databases 306, including a probability database (not pictured), a payout database 306, a player preference database (not pictured), and/or a display format database (not pictured). An example of a payout database 306 is described herein. The described entries of 30 the sample database 306 represent exemplary information only; those skilled in the art will understand that the number and content of the entries can be different from those illustrated herein. Further, despite any description of the database 306 as a

table, an object-based model could be used to store and manipulate the data types of the present invention and likewise, object methods or behaviors can be used to implement the processes of the present invention.

Note that, although the database 306 may be described as being stored in a 5 gaming device 300, in other embodiments of the present invention some or all of this databases 306 may be partially or wholly stored in another device, such as one or more of the peripheral devices, the peripheral device server and/or the server computer. Further, some or all of the data described as being stored in the database 306 may be partially or wholly stored (in addition to or in lieu of being stored in 10 the memory (hard disk 304) of the gaming device 300) in a memory of one or more other devices, such as one or more of the peripheral devices, the peripheral device server and/or the server computer.

As discussed herein, in one or more embodiments, the gaming device 300 may take the form of a slot machine configured to operate in conjunction with the 15 present invention. A more specific description of a slot machine suitable for use with the present invention follows.

Generally, a slot machine for use in the present invention may comprise a three reel or five reel slot machine. The slot machine comprises a main display area 310 in which an outcome for a game of the slot machine is displayed to the 20 player. The main display area 310 may, for example, be a video display that displays graphical representations of reels. The main display area 310 may, in another example, comprise an area of clear glass behind which are located mechanical reels. Within the main display area 310 is at least one payline. In accordance with one or more embodiments of the present invention, an outcome of 25 a game is a set of symbols displayed along a payline of a reeled slot machine. The slot machine may further comprise a handle coupled to a starting controller 340. A player may initiate the movement of the reels in the main display area 310 by pulling on the handle. Alternatively, a player may initiate the movement of the reels in the display area by actuating a start button coupled to the starting controller 30 340. Either or both of the handle and start button are exemplary embodiments of an input device. The processor 302 may signal a reel controller 314 to spin the reels 316, 318, 320, 322, 324 upon receipt of a valid signal from the starting 35

controller 340. A clock 326 may provide the processor 302 with a time reference for executing instructions, so that information may be presented to a player at an appropriate pace, and so that events may be logged with time stamps.

A slot machine according to the present invention may also include an 5 alternate display 312, for outputting outcome information in a modified format to a player. The alternate display 312 may be utilized, for example, to inform a player of which outcomes of various paylines are winning outcomes and upon which outcomes he had a wager.

The slot machine may also include a payment system, which is comprised 10 of a coin acceptor 348, a credit card reader 334, cashless receipt/ticket reader, and a bill acceptor. A player may utilize payment system to provide a wager for playing a game and/or for providing payment for the provision of an outcome.

The slot machine may further comprise a credit meter balance, which is an 15 exemplary embodiment of a benefit output device as described above. The credit meter balance reflects the amount of electronic credits currently available to a player. The electronic credits may be used by a player, for example, as wagers for games played on the gaming device 300. The electronic credits may also be “cashed out” as coins, bills, tokens, a cashless gaming receipt, and/or credits to another financial account associated with the player.

20 Finally, the slot machine may comprise a coin tray. Payment to the player may be rendered by dispensing coins into the coin tray. Such coins may be dispensed based on, for example, a player’s indication that the player would like to cash out his credit meter balance and/or a payout obtained by a player as a result of playing a game on the slot machine. The coin tray is an exemplary embodiment of 25 a benefit output device as described above. Note that, where appropriate, the slot machine may include different and/or additional components besides those discussed above.

30 Turning to FIG. 4, a conventional slot machine 400 is depicted with a peripheral device 458 that has been retrofitted to the slot machine 400. The components of the slot machine 400 function similarly to the corresponding components of the gaming device 300 described in detail above with reference to FIG. 3. The major difference being that in place of the alternate display 312

directly coupled to the processor 302, a peripheral device 458 that includes an alternate display 412 and a processor (CPU) 456 communicates with the processor 402 of the gaming device 400 via a communications port 460. In some embodiments, the peripheral device 458 may communicate with the processor 402 via other means, such as, for example, the network server interface 442. The processor 456 on the peripheral device 458 allows the peripheral device 458 to function independently of the gaming device 400 if so desired. Thus, in some embodiments, a peripheral device 458 may be under the control of a player and/or may be used for other functions even when not coupled to the gaming device 400.

10

#### D. DATABASES

As indicated above, it should be noted that although the example embodiments depicted in FIGs. 3 and 4 include one particular database 306/406 stored in memory, other database arrangements may be used which would still be in keeping with the spirit and scope of the present invention. In other words, the present invention could be implemented using any number of different database files or data structures, as opposed to the one depicted in FIGs. 3 and 4. Further, the individual database files could be stored on different devices (*e.g.* located on different storage devices in different geographic locations, such as on a third-party server). Likewise, the program 354/454 could also be located remotely from the memory and/or on a server. As indicated above, the program 354/454 may include instructions for retrieving, manipulating, and storing data in the database, as may be useful in performing the methods of the invention.

25

##### **1. Probability database**

Where appropriate, a probability database may be utilized in the performance of the inventive processes described herein. A probability database may be stored in the memory in tabular form, or any other appropriate database form, as is well known in the art. The data stored therein may include a number of exemplary records or entries, each defining a random number. Those skilled in the art will understand that the probability database may include any number of entries. The tabular representation may also define fields for each of the entries or

records. The fields may specify: (i) a random number or range of random numbers that may be generated by the random number generator 308; and (ii) an outcome that indicates the one or more indicia comprising the outcome that corresponds to the random number of a particular record. A gaming device 300 may utilize a 5 probability database to determine, for example, what outcome corresponds to a random number generated by a random number generator 308 and to display the determined outcome. The outcomes may comprise the five symbols to be displayed along a payline of a five-reel slot machine.

Other arrangements of probability databases are possible. For example, the 10 book “Winning At Slot Machines” by Jim Regan (Carol Publishing Group Edition, 1997) illustrates examples of payout and probability tables and how they may be derived. The entirety of this book is incorporated by reference herein for all purposes.

15 **2. Payout Database**

Turning to FIG. 5, a tabular representation of an embodiment of a payout database 306 according to some embodiments of the present invention is illustrated. Where appropriate, a payout database 306 may be utilized in the performance of the inventive processes described herein. A payout database 306 20 may be stored in the memory in tabular form, or any other appropriate database form, as is well known in the art. The data stored therein includes a number of example records or entries, each defining an outcome that may be obtained on a gaming device 300 that corresponds to a payout. Those skilled in the art will understand that the payout database 306 may include any number of entries. The 25 tabular representation also defines fields for each of the entries or records. The fields specify: (i) a number of symbols field 500, which indicates the required number of symbols that must appear on a given payline to qualify for a corresponding payout; (ii) a payout for “LEMON” symbol field 502 that indicates the amount paid out for an outcome including the corresponding number of 30 symbols 500 on the same payline; (iii) a payout for “ORANGE” symbol field 504 that indicates the amount paid out for an outcome including the corresponding number of symbols 500 on the same payline; (iv) a payout for “BELL” symbol

field 506 that indicates the amount paid out for an outcome including the corresponding number of symbols 500 on the same payline; and (v) a payout for “CHERRY” symbol field 508 that indicates the amount paid out for an outcome including the corresponding number of symbols 500 on the same payline. The 5 outcomes may be those obtained, for example, on a five- reel slot machine with nine paylines.

10 A gaming device 300 may utilize the payout database 306 to determine whether a payout should be output to a player as a result of an outcome obtained for a game. For example, after determining the outcome to output on the gaming device 300, the gaming device 300 may access the payout database 306 to determine whether the outcome to be displayed is one of the outcomes stored as corresponding to a payout, *e.g.*, “CHERRY, CHERRY, BELL, BELL, CHERRY” in FIG. 5 pays 10 credits. If it is, the gaming device 300 may provide the corresponding payout to the player.

15 Other arrangements of payout databases are possible. For example, the above incorporated book “Winning At Slot Machines” by Jim Regan illustrates examples of payout and probability tables and how they may be derived.

### 3. Other Databases

20 In some embodiments of the present invention, a player preference database and/or a display format database may be included among the gaming devices’ databases. A player preference database may store information describing preference information of individual players regarding how they want outcomes to be displayed on the alternate display 312. Once populated with player preferences, 25 this type of database would allow a gaming device to automatically configure itself to display alternatively formatted outcomes for a specific player upon the player identifying himself to the gaming device, *e.g.*, by providing a player tracking card for scanning. As indicated above, outcomes may be alternatively formatted based upon many different factors including: variations in color (*e.g.*, easier to read 30 colors), contrast, brightness, size (*e.g.*, magnified), shape (*e.g.*, modified fruit symbols, letters or numbers), language (*e.g.*, Spanish, French, English), grouping (*e.g.*, representations of winning paylines may be displayed together, paylines upon

which the player actually wagered may be grouped), order (e.g., left to right in alphabetical or probability order), arrangement (e.g., in a horizontal line rather than along a non-linear payline), and/or orientation (e.g. in a vertical list or a compact rectangle).

5       A display format database may store predefined or standard alternative formats for outcomes that are particularly popular with players or have been determined by experts to be clear and easy to understand. In other words, a gaming device may store a number of alternative formats for outcomes from among which a player may choose. Beyond the display format parameters  
10      described above with regard to the player preference database, the display format database may also provide players with a choice of highlighting particular symbols or rows in a variety of methods (e.g., making them blink, highlighting them with color, surrounding the symbols with color, only displaying winning outcomes). In some embodiments the game outcome may be revealed on the alternate display at  
15      different speeds or times than the game (e.g., alternate display may be updated in real time as each reel stops spinning, outcome may be displayed on the alternate display all at once when the last reel stops spinning, *etc.*).

## E. METHODS

20       The system discussed above, including the hardware components and the databases, are useful to perform the methods of the invention. However, it should be understood that not all of the above described components and databases are necessary to perform any of the present invention's methods. In fact, in some embodiments, none of the above described system is required to practice the  
25      present invention's methods. The system described above is an example of a system that would be useful in practicing the invention's methods.

30       The particular arrangement of elements in the following discussion, as well as the number and order of example steps of various methods discussed herein, is not meant to imply a fixed order, sequence, quantity, and/or timing to the steps; embodiments of the present invention can be practiced in any order, sequence, and/or timing that is practicable. Likewise, the labels used to reference the

individual steps of the methods are not meant to imply a fixed order, sequence, quantity, and/or timing to the steps.

Method steps of some embodiments of the present invention may be summarized as follows. An outcome is determined and displayed in a conventional manner using a conventional display. Simultaneously or subsequently, an alternative format for the outcome display is determined and output on an alternate display device 312. In embodiments wherein an alternate display device 412 is embodied on a peripheral device 458, the alternative format for the outcome display may be communicated to the peripheral device 458 before being displayed. In some embodiments, the outcome itself may be communicated to the peripheral device 458 and the peripheral device 458 may determine an alternative format for the outcome display and output it on an alternate display device 412. In some embodiments, a player preference database may be referenced to determine the alternative format for the outcome display.

Turning to FIGs. 6A to 6C, an example of the method of the present invention is illustrated. FIG. 6A depicts a representation of exemplary primary 600A and alternate 602A displays after a game has just been started. The primary display 600A shows the spinning reels 604, 606, 608, 610, 612, and the alternate display is blank. As illustrated, each end of each payline may be identified with a numeric label so that the player may more easily correlate the paylines on the primary display 600A with the paylines on the alternate display 602A.

FIG. 6B depicts an exemplary representation of the primary 600B and alternate 602B displays after one of the reels has stopped spinning. The primary display 600B shows the stopped reel, while the alternate display 602B remains blank, consistent with one or more embodiments of the present invention.

FIG. 6C depicts an exemplary representation of the primary 600C and alternate 602C displays after the game outcome has been revealed. The primary display 600C shows the stopped reels, while the alternate display 602C shows the symbols along each payline, consistent with one or more embodiments of the present invention. The illustration demonstrates that the large payout outcome of five “LEMONS” which is obscured among all the confusing crossing paylines of

the main display 600C, is much more apparent in the alternate display 602C of payline “4” which can be viewed in isolation.

Turing to FIG. 7, an alternative embodiment of the present invention is depicted. The primary display 700 depicts example outcome information a 5 conventional manner. The alternate display 702 includes alternative formatting that includes additional information. First note that the outcomes corresponding to the five different paylines are grouped based upon those paylines upon which the player placed a bet 704 versus those he did not 706. Referring to the specific example in FIG. 7, paylines 1, 3 and 5 are grouped as paylines bet (active paylines) 10 while paylines 2 and 4 are grouped as paylines not bet (inactive paylines). Second note that the display of the outcome of each payline includes an indication 708 of the payout that would be awarded if a wager had been made on the corresponding payline. Referring again to the specific example in FIG. 7, paylines 1 and 5 show a payout and paylines 2 and 4 are grayed-out indicating that even if those payline 15 show a payout amount, there will be no payout for them since they were not active paylines. Thus, the illustration demonstrates alternative formatting based on linear, non-overlapping, non-crossing, horizontal paylines and “paylines bet/not bet” grouping. In addition, the illustration also demonstrates the clarity with which the alternative display 702 facilitates providing additional information (e.g. payout per 20 payline) to a player. Note that in some embodiments, the alternate display 702 may be used like a checklist to facilitate a player making wagers on particular paylines before the outcome is generated, in addition to subsequently displaying outcomes in a simplified manner. For example, the player may be able to indicate which paylines he wants to be active by touching a touch sensitive screen 25 displaying each of the available paylines before a handle pull.

#### F. EXAMPLE ILLUSTRATIVE EMBODIMENTS OF THE INVENTION

The following very specific additional examples are provided to illustrate 30 particular embodiments of the present invention, particularly from the perspective of potential users of the invention, including players and casinos.

**Example 1:** A five-reel slot machine with nine possible paylines has a primary display as well as an alternate display. The alternate display has two separate areas – a “paylines played” area and a “paylines not played” area. After a play of the game, and after the game outcome is displayed on the five reels of the 5 primary display, the alternate display is populated with images. The images are nine “three by five grids” showing the game outcome; the symbols displayed on the five reels (and three positions shown by each reel). Each of the nine images has one different set of symbols of one of the nine paylines highlighted (e.g., symbols not on the payline are darkened). The images highlighting the paylines played by the player are placed in the “paylines played” area, and the images highlighting the paylines not played (if any) are displayed in the “paylines not 10 played” area.

**Example 2:** A “ten by ten grid” of slot machine reels represented on a 15 touch sensitive screen is displayed. Each player is allowed to choose five different reel positions on the grid as their own payline, and may create as many paylines as desired by placing a bet for each payline they define. In other words, a player could simply drag his finger across a touch screen to draw his customer payline. In some embodiments, a set of non-standard predefined paylines may be available 20 from which a player may choose. Once the game is started the alternate display shows the selected custom paylines. The symbols for each payline are displayed on the alternate display in real-time as the reels stop spinning. On the alternate display the symbols are twice the size of the original and winning outcomes are shown by placing a red line around the paylines that provide winning outcomes.

25

**Example 3:** A five-reel slot machine with three visible reel positions each, includes a primary display. On the primary display there are five different paylines, three horizontal paylines, a V-shaped payline, and inverted V-shaped payline. A player approaches the slot machine with a Bluetooth™ enabled PDA 30 running an alternative display program according to the present invention. On the player’s PDA, an alternate display with five rows with positions for five symbols per row is automatically displayed. The slot machine includes a wireless

transmitter that actively communicates its outcome information to any proximate compatible receivers. The different rows represent the different paylines. Before the game starts the alternate display on the PDA is blank. After the game is played and the wheels stop spinning, the symbols on each payline are displayed on the  
5 alternate display in a common format where each payline is shown as a horizontal line of symbols.

**Example 4:** A five reel slot game with a Pirate Treasure theme is provided. On the primary display the player lines up special reel symbols that  
10 allow him to make progress toward earning coins for accumulating treasures. The player progresses through five stages of the game, each stage lasting five spins of the reels. Each stage of the game uses a different set of reel symbols on each reel. To make the transition from one stage to another more clear to the player, the alternate display shows graphics to indicate within which stage the game is  
15 currently. While it may be possible to get the same information from the reels of the primary screen, players may find it easier to get that information when it is presented in a more animated style on the alternate display area.

#### G. ADDITIONAL EMBODIMENTS

20 In some embodiments, the alternate display may be turned off by the player. An experienced player may find an alternate display distracting and may elect to turn off the alternate display.

25 In some embodiments, a gaming device may implement a game in which the main display outcomes include numeric values that are totaled for determining payouts. In such an embodiment, the alternate display may provide summary information or tally information that helps players track their progress or determine their standing in a game.

30 In some embodiments, the alternate display may display an altered version of the outcome. The nature of the alteration may include many different factors. For example, an outcome may be altered based upon the player's value to the casino, the number of coins wagered, the length of time the player has been playing, a particular symbol that appeared in an outcome, *etc.* In such

embodiments, the outcomes could be altered by changing a symbol, changing the reel position, changing the value of a symbol, changing the duration of a symbol, *etc.*

5 In some embodiments, the alternate display may only display the complex portions of the main display. In other words, horizontal, linear outcomes may not appear on the alternate display in some embodiments.

10 In some embodiments, other explanatory content (*e.g.*, text, animation) may be included on the alternate display. For example, rather than just highlighting the outcomes, the alternate display may provide explanatory text for why an outcome was a winning (or losing outcome). Outcomes that are commonly confusing to the player may be highlighted with explanatory text or other content every time the outcome occurs (*e.g.*, “this looks like a winning combination, but is actually just similar to another combination”). Turning to FIG. 8, an example is illustrated. The gaming device 800 pictured in FIG. 8 includes an example alternate display 15 804 that provides an explanation why an outcome displayed at payline 1 on the main display 802 that may appear to be a winning outcome listed in the pay table 806 is not, in fact, a winning outcome. In this example, the alternate display 804 states:

20 **"ALTHOUGH PAYLINE 1 SHOWS FOUR LEMONS TOTAL,  
PAYOUTS ARE ONLY MADE FOR ADJACENT SYMBOLS"**

25 In some embodiments, there may be an option to ask for additional information. A player may, for example, press a touch screen to receive an explanation as to why a particular outcome was a winning (or losing) outcome.

30 In some embodiments, overlay information may also be included on the primary screen or alternate display (*e.g.*, like a “telestrator”). In some embodiments, the images that might have been displayed on an alternate display in the above embodiments, may, at the touch of a button, instead be overlaid onto the primary display. The overlay may be bright (and the normal primary display darkened) in order to make the overlaid images and content easier to read and view. In some embodiments, the alternate display may replace the main display entirely. In other words, on a gaming device without a separate screen for an

alternate display, at the touch of a button, or based on some other criteria, the main display may be erased and in its place, an alternate display could be substituted. In some embodiments with a screen for the main display and a screen for the alternate display, the alternate display could be enlarged to displace the main

5 display entirely.

In some embodiments, a player may be able to select from several alternate display types to choose one that they find most pleasing (e.g., select from different color schemes). This may also include selecting the desired size of the images displayed on the alternate display. Players might also be able to directly customize

10 the look and feel of the alternate display, for example by indicating whether or not they want representations of paylines not activated (*i.e.* not bet) to be shown in the alternate display. Such customizations could be stored in a player database at the slot server so that the customizations were automatically applied whenever the player inserted a player tracking card into the machine.

15 Other embodiments of the present invention apply to table games such as poker, blackjack, roulette, or craps. In the game of poker, for example, alternative formats of outcomes may include an indication of relative value of the players' and dealer's hands. In some embodiments, an image recognition system may be employed to determine the values of the hands and a peripheral device in

20 communication with the image recognition system may display information that immediately indicates who won a hand and why. In such table game embodiments, peripheral devices could be attached to the table which allow the dealer or players to view alternatively formatted outcome information.

25 H. CONCLUSION

It is clear from the foregoing discussion that the disclosed systems and methods to display alternative information represents an improvement in the art of gaming. While the method and apparatus of the present invention has been described in terms of its presently preferred and alternate embodiments, those

30 skilled in the art will recognize that the present invention may be practiced with modification and alteration within the spirit and scope of the appended claims.

The specifications and drawings are, accordingly, to be regarded in an illustrative rather than a restrictive sense.

Further, even though only certain embodiments have been described in detail, those having ordinary skill in the art will certainly appreciate and  
5 understand that many modifications, changes, and enhancements are possible without departing from the teachings thereof. All such modifications are intended to be encompassed within the following claims.